

REMARKS

Claims 1-8 and 14-27 were examined. Claims 1-2, 4, 6, 14 and 22-23 are amended. Claims 7, 9-13, 16-17 and 21 are canceled. Claims 1-6, 8, 14-15, 18-20 and 22-27 remain in the Application.

The Patent Office rejects claims 1-14 and 23 under 35 U.S.C. §102(e). The Patent Office rejects claims 2-5, 6-13, 15-22 and 24-27 under 35 U.S.C. §103(a). Reconsideration of the pending claims is respectfully requested in view of the above amendments and the following remarks.

A. 35 U.S.C. §102(e): Rejection of Claims 1, 14 & 23

The Patent Office rejects claims 1, 14 and 23 under 35 U.S.C. §102(e) as anticipated by U.S. Patent Application No. 2002/0001688 of Ueda et al. (Ueda). Ueda describes a sheet resin composition that may be applied to a wafer. Sheet resin composition 2 is applied on an active surface of silicon wafer 1 having bumps 5 thereon. See paragraph 0055. With the sheet resin composition applied, the wafer may be back-grinded and optionally diced to form chips 20 to which the sheet resin 2 is still adhered. The diced chip may be packaged with the sheet resin composition still applied (the sheet resin composition acting as an underfill composition). The steps of back-grinding and dicing may be reversed. See paragraph 0057.

Independent claim 1 describes a method comprising selecting a dicing tape with an adhesive layer that has a thickness greater than a height of one or more bump electrodes formed on a first side of a wafer; applying the dicing tape to the first side of the wafer such that the adhesive layer conforms to the one or more bump electrodes; and dicing the wafer from a second side of the wafer opposite the first side, the dicing extending into the adhesive layer a distance less than a thickness of the adhesive layer.

Claim 1 is not anticipated by Ueda, because Ueda does not describe dicing a wafer wherein dicing extends into an adhesive layer a distance less than a thickness of the adhesive layer. Ueda dices through its sheet resin composition in a dicing operation so that the sheet resin composition remains on a chip as an underfill material.

Independent claim 14 describes a method comprising, among other operations, dicing a wafer from a second side of the wafer opposite a first side including a dicing tape with an adhesive layer, the dicing extending into the adhesive layer a distance less than a thickness of the adhesive layer. This is not taught by Ueda as Ueda dices through its resin composition.

Independent claim 23 is not anticipated by Ueda, because Ueda does not describe a method comprising applying an adhesive to a wafer surface and, following applying the adhesive layer, applying a backing film to the adhesive layer. Ueda describes a sheet resin composition that may include a releasing plastic film, with the plastic film being removable. Ueda does not describe applying a backing film to an adhesive layer once the adhesive layer has been applied.

Applicants respectfully request the Patent Office withdraw the rejection to claims 1, 14 and 23 under 35 U.S.C. §103(e).

B. 35 U.S.C. §103(a): Rejection of Claims 2-5, 7-13, 15-20, 22 & 24-26

The Patent Office rejects claims 2-5, 7-13, 15-20, 22 and 24-26 under 35 U.S.C. §103(a) as obvious over Ueda in view of U.S. Patent Application No. 2002/0161100 of Kojima et al. (Kojima). Kojima is cited for disclosing a double bump wafer.

Claims 2-5 and 8-13 depend from claim 1 and therefore contain all the limitations of that claim. Accordingly, claims 2-5 and 8-13 are prima facie not obvious over the cited references, because the references fail to disclose a method including dicing a wafer from a second side of the wafer opposite a first side having an adhesive layer, the dicing extending into the adhesive layer a distance less than a thickness of the adhesive layer. As noted above, Ueda teaches dicing through the wafer and a sheet resin composition. See paragraphs 0055 and 0057. Kojima does not cure this defect. Finally, there is no motivation from the cited references for the method as described by independent claim 1. Ueda, for example, in one embodiment, uses a sheet resin composition as an underfill material. See paragraph 0057. There is no motivation to not dice through the entire adhesive layer.

Claims 15-20 and 22 depend from claim 14 and therefore contain all the limitations of that claim. Accordingly, claims 15, 18-20 and 22 are not obvious over the cited references, because the references are not taught to disclose or provide any motivation for dicing a wafer, wherein the dicing extends into an adhesive layer on an opposite side of the wafer, a distance less

than a thickness of the adhesive layer. The argument presented above with respect to dependent claims 2-5 and 8-13 are relevant here.

Claims 24-26 depend from independent claim 23 and therefore contain all the limitations of that claim. Accordingly, claims 24-26 are not obvious over the cited references, because the cited references do not teach or provide any motivation for applying an adhesive to a wafer surface to form an adhesive layer and, following applying the adhesive layer, applying a backing film to the adhesive layer. As noted above, with respect to independent claim 23, Ueda teaches applying a resin composition optionally with a plastic film. The plastic film is not applied separately once the resin composition is applied. Kojima does not cure this defect. There is no motivation in the combined references for applying a backing film to a previously applied adhesive layer.

Applicants respectfully request the Patent Office withdraw the rejection to claims 2-5, 8-13, 15, 18-20, 22 and 24-26 under 35 U.S.C. §103(a).

C. 35 U.S.C. §103(a): Rejection of Claims 6-21 & 27

The Patent Office rejects claims 6-12 and 27 under 35 U.S.C. §103(a) as obvious over Ueda and Kojima and further in view of U.S. Patent Application No. 2003/0180987 of Milla et al. (Milla). Milla is cited for disclosing a dual blade dicing procedure.

Claims 6, 21 and 27 depend from claims 1, 14 and 23, respectively. The addition of Milla does not teach the limitations of the respective independent claims that was noted above. Accordingly, Applicants respectfully request the Patent Office withdraw the rejection to claims 6, 21 and 27 under 35 U.S.C. §103(a).

CONCLUSION

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance, and such action is earnestly solicited at the earliest possible date. If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly, extension of time fees. If a telephone interview would expedite the prosecution of this Application, the Examiner is invited to contact the undersigned at (310) 207-3800.

Respectfully submitted,

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10/6/05

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I hereby certify that this correspondence is being transmitted by facsimile on the date shown below to the United States Patent and Trademark Office.

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